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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,928	02/28/2002	Yuan-Ku Lan	B-4514 619559-4	3931

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EXAMINER	
AKHAVANNIK, HADI	

ART UNIT	PAPER NUMBER
2621	

DATE MAILED: 02/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/086,928	LAN, YUAN-KU	
	Examiner	Art Unit	
	Hadi Akhavannik	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-20 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-20 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Response to Arguments

1. Examiner thanks the applicant for his cooperation in amending to the specification. The objection to the drawings is withdrawn.

2. Applicant argues that the rejection made by the examiner was not "fully and clearly stated". However, Examiner respectfully disagrees and believes that he did spell out what was in his mind in rejecting the claims. Furthermore, the arguments made by the Applicant indicate that the applicant did fully understand the Examiner's rejection. Examiner thanks Applicant for being in the spirit of cooperation in trying to understand the Examiner's rejection.

3. Applicant's arguments filed 1/3/06 have been fully considered but they are not persuasive. Applicant has amended claims 1 and 11 to include the phrase "in their entireties" and "in its entirety". Examiner notes that Morikawa discloses checking patterns that are surrounded by other checking patterns in its entirety (figure 5b item 34, which is a second checking pattern, is enclosed entirely in item 33w1, which is a first checking pattern. Therefore, Examiner believes that this teaches Applicants amendment to claims 1 and 11.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-6 and 11-16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morikawa (5308682).

Regarding claim 1, Morikawa discloses a method of checking overlap accuracy of patterns on four stacked semiconductor layers, comprising: forming a first checking pattern on a first semiconductor layer, a second checking pattern on a second semiconductor layer, a third checking pattern on a third semiconductor layer and a fourth checking pattern on a fourth semiconductor layer (see figures 1-5, see the abstract, and column 5 lines 23-58 disclose the ability of forming a pattern that is used for alignment on four different layers);

wherein the first, second and third checking patterns overlap to form a first rectangular frame, the fourth checking pattern is surrounded by the first rectangular frame, a first pair of parallel sides of the first rectangular frame is formed by the first checking pattern, and a second pair of parallel sides of the first rectangular frame is formed by the second and third checking patterns (figures 1-5, column 5 lines 50-58, and column 12 lines 3-64 disclose that the check patterns can have many different shapes including squares and rectangles and the shapes can be parallel);

checking patterns that are surrounded by other checking patterns in its entirety (figure 5b item 34, which is a second checking pattern, is enclosed entirely in item 33w1, which is a first checking pattern. Therefore, Examiner believes that this teaches Applicants amendment to claims 1 and 11.

measuring overlap accuracy between the fourth checking pattern and the first checking pattern; and measuring overlap accuracy between the fourth checking pattern

and the second and third checking patterns (column 5 line 50 to column 6 line 34 disclose an alignment method that is used to check the overlap accuracy between the different layers).

While Morikawa may not explicitly teach the exact claimed shape, it would have been obvious at the time of the invention to one of ordinary skill in the art to alter the checking patterns as taught by Morikawa such that the patterns form a rectangular frame with another checking pattern located inside the rectangular frame because there is no disclosed criticality to using the applicants pattern as opposed to any other pattern. Further, as seen in the figure, the pattern in Morikawa is comprised of a series of parallel and perpendicular lines, and claimed arrangement is simply a specific arrangement of these lines. Any similar arrangement of parallel and perpendicular lines is simply an obvious rearrangement of the pattern and shape of Marikawa. Therefore, the checking pattern as disclosed by Morikawa would function equally well as the checking pattern claimed by the applicant.

5. Regarding claims 2-6, 9, and 11-16 please see the rejection of claim of claim 1 above. Specifically for claims 2-6 and 12-16 see the reasoning for lacking disclosed criticality.

6. Regarding claim 20, please see the rejection of claim 1, specifically see figures 5a-5b, disclose rectangles.

7. Claims 7 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morikawa (5308682) in view of Ziger (6327513).

Regarding claims 7 and 17 Morikawa discloses all aspects of claims 7 and 17 except locating positions on a patterns and subtracting them to see if it falls within a specified range.

Ziger (6327513) discloses subtracted locations and checking if the positions fall within a predetermined range (figure 12-13 and column 2 line 67 to column 6 line 9 disclose taking the difference of two locations on a wafer and seeing which error range it falls in order to calculate the offset. Specifically see column 4 line 43 to column 5 line 56 to see disclosure of calculating offset).

It would have been obvious at the time of the invention to one of ordinary skill in the art to combine in Morikawa an method to calculate offsets between points as taught by Ziger in order to create another method to check for overlap accuracy because it is a conventional method to check for offset and overlap accuracy and makes for a more flexible system.

8. Claims 8, 10, and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morikawa in view of Ziger as applied to claims 7 and 17 above and in further view of Suzuki et al. (5189707 referred to as "Suzuki' herein).

Regarding claims 8, 10, and 18-19, the combination of Morikawa and Ziger disclose all aspects of claims 8, 10, 18-19 except the ability the use the average position.

Suzuki discloses the ability to average a set of positions between two locations when determining the distance and position between points (column 4 lines 9-19

disclose taking the average of many positions in order to determine the distance between points).

It would have been obvious at the time of the invention to one of ordinary skill in the art to include in the combination of Morikawa and Ziger the ability to take the average of many points between two objects to accurately determine the average position between the two points because it is a common and conventional method for accurately determining the distance between two objects. Further, this makes for a more robust system.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nishihara et al. (5109430), which discloses the ability to check for

alignment between to locations by comparing patterns), Stone (4593406), which discloses taking the difference between points until predefined accuracy limits are achieved.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hadi Akhavannik whose telephone number is 571-272-8622. The examiner can normally be reached on 10:30-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mancuso can be reached on (571) 272-7695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JOSEPH MANCUSO
SUPV PATENT EXAMINER